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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,504	10/29/2003	Tetsuya Kobayashi	1324.68599	5768

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	**PAPER NUMBER**
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,504	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-17 and 22-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7-15* is/are allowed.

6)☒ Claim(s) *1,2,4-6,16,17 and 22-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The applicants' arguments with respect to the rejections of claims 1 and 3 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1**, **2**, **4**, **5**, **16**, **17**, **22**, **26**, **27**, and **28** are rejected under 35 U.S.C. 102(e) as being anticipated by Hirakata et al. (US 6,636,190, herein after "Hirakata").

As to **claim 1**, Hirakata [figs. 1, 2a, and 3b] teaches an illumination device [col. 7 lines 1-4] for illuminating a display area of an active matrix type liquid crystal display device [col. 34 lines 17-18], comprising:

at least one light source ("*light source unit 10*") [fig. 2] capable of changing light emission brightness;

at least one light-emitting area (the area through which the light "*hv*" passes, as shown in fig. 1) for emitting light from the light source; and

a light source power supply circuit ("*primary circuit*") [fig. 1] for switching between a maximum lighting state in which the light source is made to emit light at a specified maximum

brightness and an intermediate lighting state in which the light source is made to emit light at a specified intermediate brightness lower than the maximum brightness [fig. 11d];

wherein the light source power supply circuit synchronizes with one of gate pulses sequentially outputted to plural gate bus lines formed in the liquid crystal display device [figs. 11a and 11c] (since the current controlling backlight-lighting is synchronized to a vertical sync signal as shown in figs. 11a and 11c, and the vertical sync signal is synchronized to a gate signal in active matrix type liquid crystal displays, the current controlling back-lighting is synchronized to a gate signal) and switches between the maximum lighting state and the intermediate lighting state [fig. 11d], and

when a gate pulse is outputted to a gate bus line as a display start line in the light-emitting area (as the "*Vsync*" signal starts to be outputted to the display, a gate signal is outputted to the first gate line of the display.) [fig. 11a], the light emission brightness of the light-emitting area becomes the intermediate lighting state.

As to **claim 2**, Hirakata [figs. 3a and 3b] teaches that the light-emitting area includes a light emission opening to be used when the display area is illuminated and disposed substantially in parallel to an extension direction of a gate bus line formed in the liquid crystal display device.

As to **claim 4**, Hirakata teaches the intermediate lighting state being set to have a brightness level of 50% or less of a brightness level of the maximum lighting state.

As to **claim 5**, Hirakata [fig. 11d] teaches an illumination time in the maximum lighting state being a time of 50% or less of one frame period.

As to **claim 16**, Hirakata teaches the light source power supply circuit ("*primary circuit*") [fig. 1] including a brightness adjusting volume ("*inverter circuit*") for adjusting brightness of emission light from the light-emitting area.

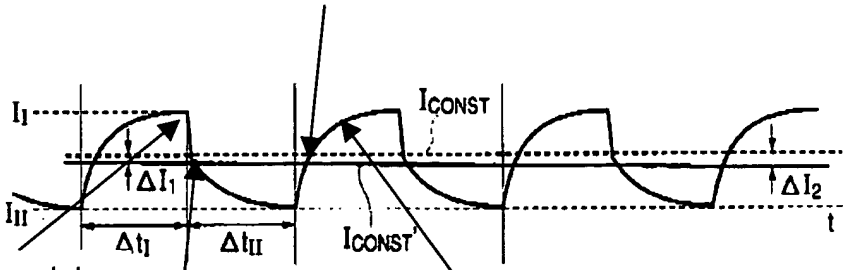
As to **claim 17**, Hirakata teaches a liquid crystal display device comprising the illumination device of claim 1 [abstract lines 1-2].

As to **claim 22**, Hirakata teaches the illumination device, wherein light emitting area including a plurality of the light sources ("*fluorescent lamp 8*") [fig. 2a]; and

a light source control system ("*light control circuit*") [fig. 1] that controls currents [fig. 4a] fed to the plurality of the light sources (controlling the currents input to the inverter circuit, and thus adjusting the currents input to the light sources), respectively, to switch between the maximum lighting state in which the light-emitting area is made to emit light at the maximum brightness and the intermediate lighting state in which the light emitting area is made to emit light at the specified intermediate brightness lower than the maximum brightness [fig. 11d].

As to **claim 26**, Hirakata teaches the light source control system controlling a current so that a non-lighting state occurs between the maximum lighting state and the subsequent intermediate lighting state [drawing 1 provided below, which is equivalent to fig. 11d of Hirakata].

a lighting state lower than the intermediate lighting state



maximum lighting state

The subsequent intermediate lighting state

non-lighting state

Drawing 1

As to **claim 27**, Hirakata teaches the light source control system controlling a current so that a lighting state lower than the intermediate lighting state occurs between the maximum lighting state and the subsequent intermediate lighting state [drawing 1 provided above].

As to **claim 28**, Hirakata teaches a liquid crystal display device of an active matrix type [col. 34 lines 17-18], comprising the illumination device of claim 22.

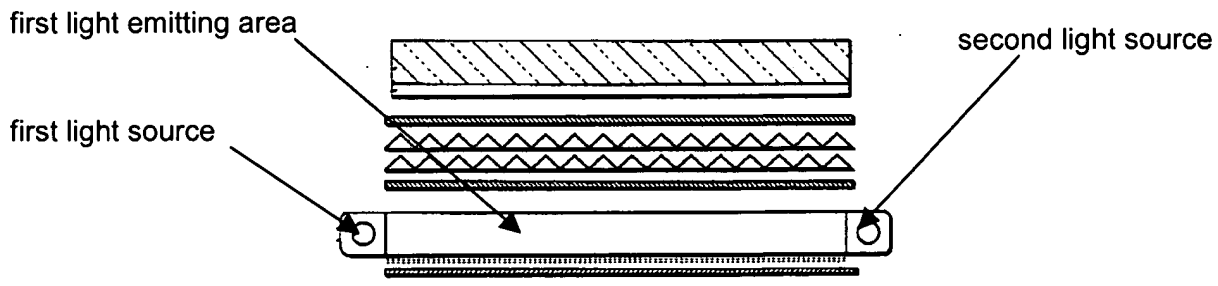
Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakata in view of Hiyama et al. (US 6,608,657, herein after "Hiyama").

Hirakata [fig. 2a] teaches the illumination device comprising a first light source unit ("*light source unit 10*") including a first light guide plate ("*light guide 11*") and a first light source ("*fluorescent lamp 8*") disposed at an end thereof, for mainly illuminating a first light-emitting area [drawing 2 provided below, which is equivalent to fig. 2a of Hirakata] and a second light source unit.



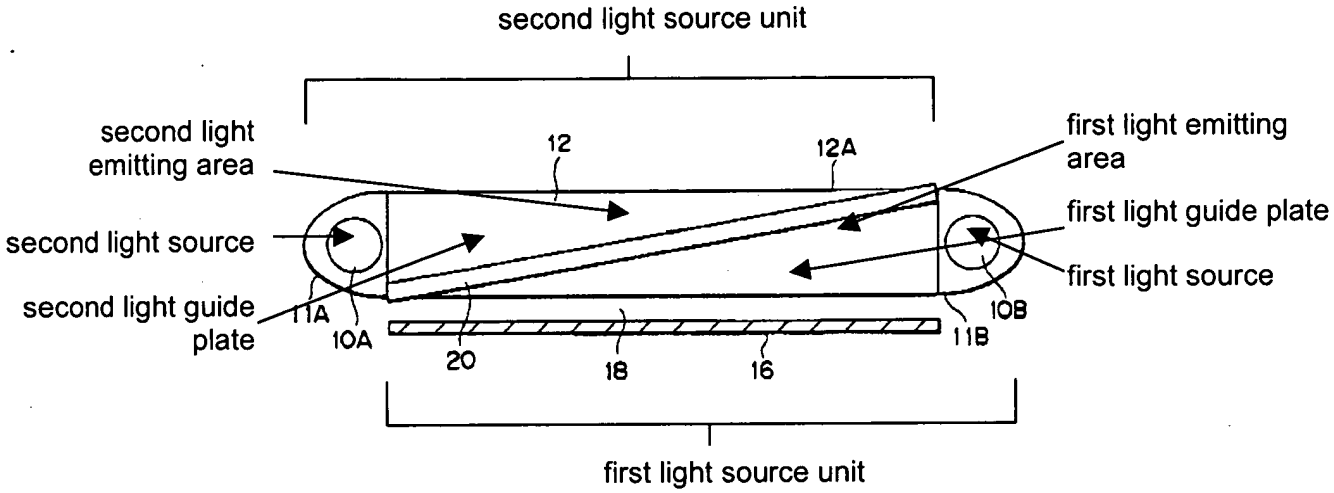
Drawing 2

Hirakata does teach a second light source unit laminated on the first light source.

However, Hiyama [drawing 3 provided on page 6 of this office action, which is equivalent to fig. 9 of Hiyama] teaches an illumination device included in a liquid crystal display comprising:

a first light source unit including a first light guide plate and a first light source disposed at an end thereof, for mainly illuminating a first light-emitting area and supplying part of light to an adjacent second light-emitting area; and

a second light source unit laminated on the first light source unit and including a second light guide plate and a second light source disposed at an end thereof, for mainly illuminating the second light-emitting area and supplying part of light to the adjacent first light-emitting area.



Drawing 3

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the illumination device of Hirakata with the illumination device of Hiyama such that the second light source of Hirakata is laminated on the first light source unit of Hirakata and the device of Hirakata includes a second light guide plate, as taught by Hirayama, in order to provide a light illumination apparatus of a liquid crystal display device with high light utility efficiency and uniformity [col. 2 lines 5-11].

6. **Claims 23**, **24**, and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirakata.

Hirakata teaches a light source control system controlling currents fed to the plurality of light sources to produce a maximum lighting state, various intermediate lighting states, and a non-lighting state at various times, but does not expressly disclose the light control system feeding a current to at least one of the plurality of light sources in such ways as disclosed in the claims.

However, since each method of feeding a current to the light sources disclosed in each of the claims is not a required method of driving the illumination device, but is one of various alternative methods that can be used to drive the illumination device of LCD displays, it is an obvious matter of design choice to drive the illumination device in such ways as described in the claims.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any one of the driving methods disclosed in the claims 23, 24, 25, 26, and 27 since any one of the driving methods would perform equally well at illuminating a liquid crystal panel of a liquid crystal display apparatus.

Allowable Subject Matter

7. **Claims 7-15** are allowed.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hara et al. (US 2003/0067436) teaches a backlight device for a liquid crystal display device including a plurality of light sources, wherein one light source is laminated on other light source.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

03/05/2007

s.m.

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER